

CAN PLASTIC LID HAVING A TAMPER EVIDENT PORTION

Field of the Invention

The present invention refers to an improved plastic lid for closing a can, obtained in a metallic sheet
5 and which is of the type comprising a tubular body, with its lower edge affixing or incorporating a bottom wall and with its upper edge carrying, directly by means of a deformed portion of the tubular body or by means of an annular upper wall portion, a seat for the
10 seating and retention of the press-fit lid. Particularly, the invention refers to the provision of a plastic lid for a can of the type considered above and which is used for containing products of progressive consumption, such as certain food
15 articles.

Background of the Invention

Determined products, such as certain food articles, have to be submitted to a hermetic storage and provided with a clear visual indication to the
20 consumer that the container in which they are presented to the market has not been violated. Since many of these products are of progressive consumption, it is indispensable that after the first opening of the container, the lid, which gives access to the
25 inside of the can, may be reclosed as many times as necessary during the progressive consumption of the stored product, in order to guarantee the tightness of the reclosed can and to protect the remaining content thereof.
30 Patent application PI0203950 (PCT/BR03/00030) of the same applicant discloses a plastic lid construction comprising, in a single piece: a sealing portion which is removably seated and retained in a seat medianly provided in an annular upper wall which has its
35 external edge usually double seamed to the upper end

of the tubular body; and a tamper evident portion, comprising a lower skirt to be seated around the upper end of the tubular body, and an upper ring, seated on the upper end of the tubular body and which is
5 incorporated, externally, to the lower skirt and, internally, through breakable radial bridges, to an upper end of the sealing portion, which projects radially outwardly from the seat. The tamper evident portion presents an interruption extending along the
10 width of the upper ring and along at least part of the height of the lower skirt, along which is lodged a gripping tab which, when pulled, after the rupture of the tamper evident portion, allows achieving an easy and controlled opening of the lid.
15 The construction described above results in a reclosable plastic lid, of simple construction and relatively low cost, incorporating a gripping tab which facilitates the opening, as well as a reliable seal element which permits the prompt visualization of
20 violation.

The prior constructive solution cited above is particularly adequate for the closure of cans used to contain products of progressive consumption, whose lids are not subject, during the closure, storage and
25 shipping operations of said cans, to impacts, in the axial opening direction, in relation to other cans or to storage and handling means.

It has been verified in these known cans that, when the lower skirt of the tamper evident portion is
30 submitted to certain involuntary ascending axial forces and displacements, at least some of the radial bridges, which are located closer to the region submitted to said forces, are broken, indicating, through the partial (but visible) damage caused to the
35 seal element, that the content of the can has been

violated, which, in these cases, has not really occurred.

In brief, the construction of the seal defined in PI0203950-8 is susceptible to involuntary ruptures in 5 determined handling conditions to which the can is submitted.

Object of the Invention

The object of the invention is to provide a reclosable plastic lid for the type of can considered herein and 10 such as described in the patent application cited above, but presenting an improved construction, according to which the tamper evident portion becomes more resistant to involuntary ruptures when the plastic lid is submitted to certain usual forces and 15 impacts during the closure, storage and shipping operations of said closed cans.

Disclosure of the Invention

The improvement of the present invention is directed to a lid which comprises, in a single piece, a sealing portion, removably seated and retained in the seat and which is provided with an external edge projecting radially outwardly from the seat; a tamper evident portion comprising a lower skirt, to be seated around part of the upper end of the tubular body and which is 25 superiorly incorporated, through bridges, to the external edge of the sealing portion, the tamper evident portion presenting an interruption extending along at least part of the height of the lower skirt, the sealing portion incorporating, at its external 30 edge, a gripping tab projecting through said interruption of the tamper evident portion, said bridges being broken when submitted to a certain pulling force, which separates the tamper evident portion from the sealing portion upon the first 35 opening of the lid.

According to the invention, the breakable bridges are axially disposed around a circumferential extension of the upper end of the tubular body of the can, in order to connect an upper end of the lower skirt with the external end of the sealing portion in points which are angularly spaced from each other.

According to the improved construction, the sealing portion extends radially, until the peripheral edge of the upper end of the tubular body of the can, superiorly covering and protecting the can, and having its external edge incorporating, inferiorly, through a plurality of breakable axial bridges, the lower skirt of the tamper evident portion.

The new axial arrangement of the breakable bridges, generally seated around the upper end of the tubular body of the can, makes said bridges be submitted to a compressive force and not to a pulling force, when the lower skirt is forced upwardly, by impact of the lid against any other element, resisting much better to said forces and avoiding the undue rupture thereof.

Brief Description of the Drawings

The invention will be described below, with reference to the appended drawings, in which:

Figure 1 is a perspective view of a plastic lid constructed according to an embodiment of the present invention and incorporating a tamper evident portion; Figure 2 is an exploded perspective view of the lid of figure 1, after the rupture of the tamper evident portion;

Figure 3 is an upper plan view of the plastic lid illustrated in figure 1;

Figure 4 is a partial diametrical cross-sectional view of the lid illustrated in figures 1-3 and mounted to the upper end of a can, said section being taken according to line IV-IV of figure 3; and

Figure 5 is a view similar to that of figure 4, but with the section being taken according to line V-V of figure 3.

Description of the Illustrated Embodiment

5 According to the illustrated embodiment, the present lid can be applied to a metallic sheet can comprising a tubular body 10, with a lower end 11 securing a bottom wall 12 and with an upper end 13 securing, by a double seam 14, an annular upper wall 15, which
10 defines, internally, a seat 16 for the hermetic seating of the lid 20.

The annular upper wall 15 can take the form of a structural ring, as illustrated in figures 4 and 5, or the form of an annular plate in the cans with great
15 dimensions, such as the 18-liter cans.

The construction of both the annular upper wall 15 and the seat 16 may be achieved by different manners, provided that it allows for a hermetic and secure fitting of the lid 20 to the upper part of the can. In
20 figures 4 and 5, the construction of the annular upper wall 15 and the seat 16 is accomplished as described and claimed in patent application PI 9408643-5 granted to the same applicant in Brazil and in other countries (in the United States, US5899352 and in Europe, EPO 0706486), and therefore will not be described in details in the present disclosure.

According to the invention and as illustrated in the appended drawings, the lid 20 is preferably constructed in plastic material, transparent or not,
30 comprising a sealing portion 21 of adequate construction, so as to be removably seated and retained in the seat 16, said sealing portion 21 presenting an external edge 21b which is seated on the upper end 13 of the tubular body 10 of the can. The
35 lid 20 further comprises, in a single piece with the

sealing portion 21, a tamper evident portion 25 having a lower skirt 25a which is generally tightly seated around a circumferential extension of the upper end 13 of the tubular body 10, more particularly its double 5 seam 14, and presenting an upper end 25b which is incorporated, by means of manually breakable bridges 26, to the external edge 21b of the sealing portion 21. The bridges 26 connect the upper end 25b of the lower skirt 25a with the external edge 21b of the 10 sealing portion 21 in points which are angularly spaced apart.

According to the present invention, the bridges 26 are broken when submitted to a certain pulling force, which separates the tamper evident portion 25 from the 15 sealing portion 21, upon the first opening of the lid 20.

The tamper evident portion 25 presents an interruption 25c, in its circumferential extension, extending along at least part of the height of the lower skirt 25a, 20 said interruption 25c defining a certain circumferential spacing between respective confronting edges of the lower skirt 25a, on both sides of the interruption 25c.

According to the present invention, the sealing 25 portion 21 incorporates a gripping tab 27, axially downwardly projecting through said interruption 25c of the tamper evident portion 25, for example remaining substantially leveled with the lower skirt 25a.

In the illustrated embodiment, the gripping tab 27 30 projects along the whole axial extension of the lower skirt 25a, but it can also project axially inferiorly beyond the axial extension of the lower skirt 25a.

According to the present invention, the tamper evident portion 25 comprises at least one breakable lock 28, 35 connecting the gripping tab 27 with the lower skirt

- 25a. The gripping tab 27 is manually operable only upon the rupture of part of the tamper evident portion 25, for example, upon the rupture of each breakable rod 28.
- 5 In the illustrated construction, the lower skirt 25a incorporates the ends of a bridge 25d, circumferentially extended over the interruption 25c of the tamper evident portion 25 and over the gripping tab 27. The bridge 25d presents a first end 25e, which 10 is incorporated to the lower skirt 25a by connecting means 25f, which are broken when said first end 25e is forced away from the lower skirt 25a, for example, by being pulled radially outwardly from, in order to liberate the manual access to the gripping tab 27. In 15 the illustrated embodiment, the bridge 25d has its first end 25e superposed to said lower skirt 25a and incorporated to the latter by two connecting means 25f, which are circumferentially spaced from each other.
- 20 The gripping tab 27 is inferiorly incorporated to the bridge 25d through a breakable lock 28, in the form of one or more axial bridges, which are manually broken upon the first opening of the lid.
- The provision of the gripping tab 27 allows the 25 sealing portion 21 to be easily removed from its seating condition on the seat 16, and also a controlled and progressive opening of the can, first in the region adjacent to the gripping tab 27, and subsequently in the remaining of the seat, preventing 30 the stored product from being inadvertently taken out from the can.
- According to the present invention, the gripping tab 27 may present one of the massive and at least partially perforated forms, defining a tag, such as in 35 the illustrated construction.

It should be understood that the gripping tab 27 can be massive and formed from a respective portion of the lower skirt 25a, remaining perfectly leveled with the latter and maintaining a gap 29 therebetween.

- 5 In the illustrated construction, the external edge 21b of the sealing portion 21 incorporates a small cylindrical lower flap 21c, which surrounds, preferably tightly, a circumferential extension of the upper end 13 of the tubular body 10 and from which the
10 bridges 26 depend, being inferiorly incorporated to the upper end 25b of the lower skirt 25a.

- It is also possible, as illustrated, for the lower skirt 25a to incorporate a circumferential internal projection 25h, axially spaced from the external edge
15 21b of the sealing portion 21 and which is dimensioned to be seated and axially locked under the double seam 14 at the upper end 13 of the tubular body 10 and around the latter.

- In a constructive form, the external edge 21b of the
20 sealing portion 21 incorporates an upper circumferential rib 25g, continuous or defined in segments and which projects over the upper end 13 of the tubular body 10, so as to be loosely and telescopically fitted externally or internally to the
25 lower end 11 of another tubular body 10 stacked over said tubular body 10.

- In case the upper circumferential rib 25g presents a diameter that is smaller than the lower end 11 of the tubular body 10, it will be fitted inside a
30 circumferential recess 12a provided in the bottom wall 12, internally to the lower end 11 of another tubular body 10 stacked over said tubular body 10.

- While the invention has been described in relation to a can embodiment presenting only one constructive
35 form, it should be understood that alterations could

be made, without departing from the scope of protection defined in the appended claims.